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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/756,673	01/10/2001	Koji Yotsumoto	P 276510 KO-0021US	4563

7590 03/11/2004
PILLSBURY & WINTHROP LLP
1600 TYSON BOULEVARD
MCLEAN, VA 22102

EXAMINER

VARTANIAN, HARRY

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/756,673

Applicant(s)

YOTSUMOTO, KOJI

Examiner

Harry Vartanian

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Detailed Action

Drawings

1. The drawings are objected to because there is a typo in figure 5, item 60. ***Change base station to base station.*** A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: ***S60***. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. ***The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided.*** The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract sounds too much like the language used in a Claim.

4. The disclosure is objected to because of the following informalities: there is a typo on pg 3, line 28. ***Change mustrecover to must recover.***

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Appropriate correction is required.

5. The disclosure is objected to because of the following informalities: The applicant Claims that features 32 and 52 are transceivers or antennas. It is well known in the art that an antenna is a component found within a transceiver. Moreover, a transceiver is comprised of collection a various processing blocks like amplifiers, decoders, filters etc. In conclusion, the terms antenna and transceiver are not interchangeable. Also, the icon used in the drawings is primarily used to disclose antennas in the art. Please remove the reference to items 32 and 52 as being transceivers.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 10 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Claim recites:

"when it is determined that said peak correlation value is ***smaller*** than said predetermined path recognition threshold value and that there is no distortion on said path waveform."

The specification and specifically figures 2 and 11 disclose that such a valid path is chosen when peak correlation value is ***GREATER*** than said predetermined path recognition threshold value. Please note that any rejections below will be based on the assumption that the applicant meant to say greater.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claim 1 is rejected under 35 U.S.C. 102(a) as being applicants admitted prior

art(AAPA) by the applicant. Applicant admits that the following limitations are conventional:

receiving at least one set of signals through a transmission path, said set of signals being comprised of a predetermined number of received signals; [fig 1; (pg 1, line 26 to pg 2, line 33)]

generating at least two each of which has its own delay time, said spread code being comprised of a predetermined number of spread code bits; [fig 1; (pg 1, line 26 to pg 2, line 33)]

calculating at least two correlation values of said set of signals with said at least two spread codes; [fig 1; (pg 1, line 26 to pg 2, line 33)]

and recognizing said path as a valid receiving path for demodulating said received signals based on said at least two correlation values. [fig 2; (pg 1, line 26 to pg 2, line 33)]

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art in view of Bahai et al(US PAT#6,522,706). Regarding Claims 2 and 4, applicant's admitted prior art meets all the limitations of the Claims except stating the use of a peak correlation and non-peak correlation(Claim 2) value which may be neighboring(Claim 4) values.

However, Bahai et al's path selection method for CDMA using correlation meets the following limitations of Claims 2 and 4:

wherein said at least two correlation values are a peak correlation value and a correlation value other than said peak correlation value. **[Fig 1, (column 1, lines 36-42)]**

wherein said at least two correlation values are neighboring values. **[Fig 1, (Column 3, lines 25-38)]**

Therefor it would have been prima facie obvious at the time the invention was made for a CDMA path selection method to use neighboring correlation samples, which include peak and non-peak. The motivation to combine is stated by Bahai et al in column 1, line 59 to Column 2, line 4. More specifically, he states

"One such scheme is disclosed in U.S. Pat. No. 5,400,368. However, the disclosed scheme does not take any advantage of the shape and roll-off of the correlation of the received signal with the synchronization pattern. In addition, ***the disclosed scheme does not take into consideration the effects of different degrees of delay spread conditions.***"

Regarding Claim 3, Bahai et al meets the following limitations:

wherein said step of recognizing said path **(Column 1, lines 36-42)** as a valid receiving path comprises

the steps of calculating a plurality of ratios of said peak correlation value to a plurality of correlation values other than said peak correlation value; **(Fig 1, Fig 2 step 6; Column 2, lines 11 to Column 3, line 47)**

comparing said plurality of ratios with at least one predetermined comparison threshold value; and **(fig 2, item 8)**

recognizing said path as a valid receiving path for demodulating said received signals based on the result of comparisons of said comparing step. **(Column 4, lines 13-35)**

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Regarding Claim 5, Bahai et al meets the following limitations:

wherein said step of recognizing said path as a valid receiving path comprises the steps of calculating a plurality of ratios of a plurality of respectively neighboring correlation values; **(Fig 1, Fig 2 step 6; Column 2, lines 11 to Column 3, line 47)**

comparing said plurality of ratios with at least one predetermined comparison threshold value; **(fig 2, step 8)**

and recognizing said path as a valid receiving path for demodulating said received signals based on the result of comparisons of said comparing step. **(Column 4, lines 13-35); Abstract**

9. Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art in view of Bhagalia et al(US PAT #5,815,798). The applicant admitted prior art meets all the limitations of the Claim(see above paragraphs) except stating the use of a difference between at least two correlation values.

However, Bhagalia et al's path acquisition method meets the following limitation:

wherein said step of recognizing said path as a valid receiving path is the step of recognizing said path as a valid receiving path for demodulating said received signals based on the difference between said at least two correlation values. **[(Column 9, line 36 column 10, line 25); Please see column 10 lines 20-25 for specific reference to differencing and fig 12)]**

Therefor it would have been prima facie obvious at the time the invention was made for a CDMA path selection method to use a difference between at least two correlation values to acquire a valid path. The motivation to combine is that it is well known in the art that a correlation peak can found by seeing if there is a positive or negative difference among two values. Moreover, differencing is used in calculus to find local minima(valleys) and maxima(peak) of functions by measuring changes in slopes. A change in slope entails calculating the differences among values along a curve.

10. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art in view of Bahai et al(US PAT#6,522,706). Regarding Claim 7, applicant's admitted prior art meets the following limitations:

receiving at least one set of signals through a transmission path, said set of signals being comprised of a predetermined number of received signals; **(pg 1, line 26 to pg 2, line 17)**

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generating at least two spread codes each of which has its own delay time, said spread code being comprised of a predetermined number of spread code bits; **(pg 1, line 26 to pg 2, line 17)**

calculating at least two correlation values of said set of signals with said at least two spread codes; **(pg 1, line 26 to pg 2, line 17)**

determining whether there is a distortion on said path waveform; and **(fig 2, item S16 to S24; NOTE: noise is a form of distortion)**

recognizing said path as a valid receiving path for demodulating said received signals based on the result of determination of said determining step. **(fig 2, items S16 to S24)**

Applicant's admitted prior art fails to teach the formation of path waveform using correlation values.

However, Bahai et al's path selection method for CDMA discloses a typical path correlation waveform profile comprising multiple samples in fig 1. Therefore it would have been prima facie obvious at the time the invention was made to create a path waveform using correlation values. The motivation to combine is that it is well known in the art that correlation between spread codes and received symbols are used to determine valid paths. This is disclosed by the applicant as prior art on Page 1, lines 13-17.

Regarding Claim 8, Bahai et al meets the following limitations:

wherein said at least two correlation values are a peak correlation value and a correlation value other than said peak correlation value. **(fig 1); (Column 3, Lines 7-32)**

11. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art in view of Bahai et al(US PAT#6,522,706). Regarding Claim 9, applicant's admitted prior art meets the following limitations:

receiving at least one set of signals through a transmission path, said set of signals being comprised of a predetermined number of received signals; **(pg 1, line 26 to pg 2, line 17)**

generating at least two spread codes each of which has its own delay time, said spread codes being comprised of a predetermined number of spread code bits; **(pg 1, line 26 to pg 2, line 17)**

calculating at least two correlation values of said set of signals with said at least two spread codes; **(pg 1, line 26 to pg 2, line 17)**

comparing said peak correlation value with a predetermined path recognition threshold value; **(fig 2 of applicant item S16 to S24)**

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determining whether there is a distortion on said path waveform; and **(fig 2 of applicant item S16 to S24)**

recognizing said path as a valid receiving path for demodulating said received signals based on the results of comparison of said comparing step and determination of said determining step. **(fig 2 of applicant item S16 to S24)**

Applicant's admitted prior art fails to teach the formation of path waveform using at least two correlation values.

However, Bahai et al's path selection method for CDMA discloses a typical path correlation waveform profile comprising multiple samples in fig 1. Therefor it would have been prima facie obvious at the time the invention was made to create a path waveform using multiple correlation values. The motivation to combine is that it is well known in the art that correlation between spread codes and received symbols are used to determine valid paths. This is disclosed by the applicant as prior art on Page 1, lines 13-17.

Regarding Claim 10, Bahai et al meets the following limitations:

when it is determined that said peak correlation value is greater(please see 112 rejection above) than said predetermined path recognition threshold value and that there is no distortion on said path waveform. **(fig 2, items S16 to S24)**

12. Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art in view of Yugawa(USPAT# 6,233,272). Regarding Claim 11, applicant's admitted prior art meets the following limitations:

a spread code generator for generating at least two spread codes each of which has its own delay time, said spread codes being comprised of a predetermined number of spread code bits; **[fig 1, item 12; (pg 1, line 26 to pg 2, line 17)]**

a correlator for calculating at least two correlation values of said set of signals with said at least two spread codes; and **[fig 1, item 14; (pg 1, line 26 to pg 2, line 17)]**

Applicant's admitted prior art fails to teach the use of a path detector that chooses a path based on correlation values.

However, Yugawa meets the following limitations:

a path recognizing unit for recognizing said path as a valid receiving path for demodulating said received signals based on said at least two correlation values. **[fig 4, (Column 9, lines 21-38); fig 2c shows a plurality of correlation values]**

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Therefor it would have been prima facie obvious at the time the invention was made to use a path detection unit to determine a valid path based on correlation values of spread codes. The motivation to combine is stated by Yugawa in (Column 9, lines 40-52).

13. Claims 12-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art in view Yugawa(USPAT# 6,233,272) further in view of Bahai et al(US PAT#6,522,706) further in view of ITO (US PAT#6,553,059). AAPA, Yugawa, and Bahai et al meet all the limitations of Claim 12 and 18 including the creation of a waveform using correlation values(See Bahai et al fig 1 and column 2, lines 11-43). They fail to disclose the use of a waveform distortion detector to detect distortions in the correlation waveform.

However, ITO meets the following limitations:

further comprising a waveform distortion detector for determining whether there is a distortion on a path waveform of said path represented as a correlation profile, said correlation profile being formed based on said at least two correlation profile values. **[See (Column 3, lines 10-14) regarding a Correlator used for path selection; See (Column 9, Lines 28-33) and fig 11 for noise detector]**

Therefor it would have been prima facie obvious at the time the invention was made to use a distortion detection unit to determine a valid path based on correlation values. The motivation to combine is that distortion detection can increase the accuracy of a path detection method.

Regarding Claim 13, Bahai et al meets the following limitations:

wherein said at least two correlation values are a peak correlation value and a correlation value other than said peak correlation value. **(fig 1 and column 2, lines 11-43)**

Regarding Claim 14, Bahai et al meets the following limitations:

...said path waveform of said path represented as a correlation profile based on a ratio of said peak correlation value to a plurality of correlation values other than said peak correlation value. **(fig 1 and column 2, lines 11-43)**

Regarding Claim 15, Bahai et al meets the following limitations:

wherein said at least two correlation values are neighboring correlation values. **(fig 1 and column 2, lines 11-43)**

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Regarding Claim 16, Bahai et al meets the following limitations:

...said path waveform of said path represented as a correlation profile based on a plurality of ratios of a plurality of respectively neighboring correlation values. **(fig 1 and column 3, lines 7-67)**

Regarding Claim 19, Bahai et al meets the following limitations:

wherein said at least two correlation values are a peak correlation value and a correlation value other than said peak correlation value. **(fig 1 and column 2, lines 11-43)**

Regarding Claim 20, Bahai et al meets the following limitations:

...on said path waveform of said path represented as a correlation profile based on a ratio of said peak correlation value to a plurality of correlation values other than said peak correlation value.
(Bahai et al fig 1 and column 3, lines 7-67)

14. Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art in view Yugawa(USPAT# 6,233,272) further in view of Bahai et al(US PAT#6,522,706) further in view of ITO (US PAT#6,553,059) further in view of Bhagalia et al(US PAT #5,815,798). AAPA, Yugawa, Bahai et al, and ITO meet all the limitations of Claim 17, except stating the use of a difference between at least two correlation values.

However, Bhagalia et al's path acquisition method meets the following limitation:

wherein said step of recognizing said path as a valid receiving path is the step of recognizing said path as a valid receiving path for demodulating said received signals based on the difference between said at least two correlation values. **[(Column 9, line 36 column 10, line 25); Please see column 10 lines 20-25 for specific reference to differencing and fig 12)]**

Therefor it would have been prima facie obvious at the time the invention was made for a CDMA path selection method to use a difference between at least two correlation values to acquire a valid path. The motivation to combine is that it is well known in the art that a correlation peak can found by seeing if there is a positive or negative difference among two values. Moreover, differencing is used in calculus to find local minima and maxima of functions by measuring changes in slopes. A change in slope entails calculating the differences among values along a curve.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 703.305.8698. The examiner can normally be reached on 9-5:30 Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703.305.4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harry Vartanian
Examiner
Art Unit 2634

HV



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600